New Hampshire Department of Environmental Services

Quality Assurance System

Implementation Guidance For Program Managers

November 2001
(Minor revisions – September 2005)

This document is intended to help program managers follow and apply the QA/QC principles outlined in the DES Quality Management Plan. Members of the QA Team, who are identified on the DES Intranet under "Quality Assurance at DES," can help address any challenges or concerns raised during the implementation process.

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Introduction to the DES Quality Assurance System

The mission of the New Hampshire Department of Environmental Services (DES) is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire.

In carrying out its mission, DES relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences.

The data DES uses must be credible, and the quality of that data must be appropriate for its intended uses. The Department, through its quality assurance system is moving towards a more systematic approach to the management of data and overall quality assurance issues across DES.

To accomplish this, every DES staff member must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data. This is best accomplished by having a central documented plan, which is periodically reviewed and updated so that the overall data quality system continuously improves.

Each bureau and/or unit (hereinafter "program") within DES is responsible for assuring that data gathered by that program is of appropriate quality for its uses. Historically, DES programs have had success addressing their data quality needs. However, this was achieved largely through undocumented procedures, on-the-job training, and addressing system needs and deficiencies in an informal manner. While this approach may have served DES's past needs, the lack of documentation causes problems in assuring credibility for data underlying DES decisions and policies, and in institutionalizing a significant, but undocumented, knowledge base. To address these issues, this DES Quality Management Plan (QMP) documents the policies and procedures that ensure the appropriate quality of the environmental data used by the Department.

The DES Quality Assurance (QA) system consists of the people, functions, tools and procedures used to improve and assure the quality of data generated for data users and decision-makers. The DES quality system encompasses, and is applicable to, all aspects of its environmental data operations[1].

The QMP[2] is the main guidance document at DES to ensure that environmental programs (whether they are located within DES, or are working with DES programs under a variety of arrangements including those on a contractual or volunteer basis), produce the type and quality of results needed and expected, in particular, that all environmental data collected, generated and used will be scientifically valid; of known precision and accuracy, completeness, representativeness, and comparability; and legally defensible. Because DES interacts with many federal, state, and local government agencies, environmental groups, universities, volunteer groups, and many other organizations in order to maximize efforts to protect and enhance public

[1] Refer to QMP Chapters 2.1.2 through 2.1.5

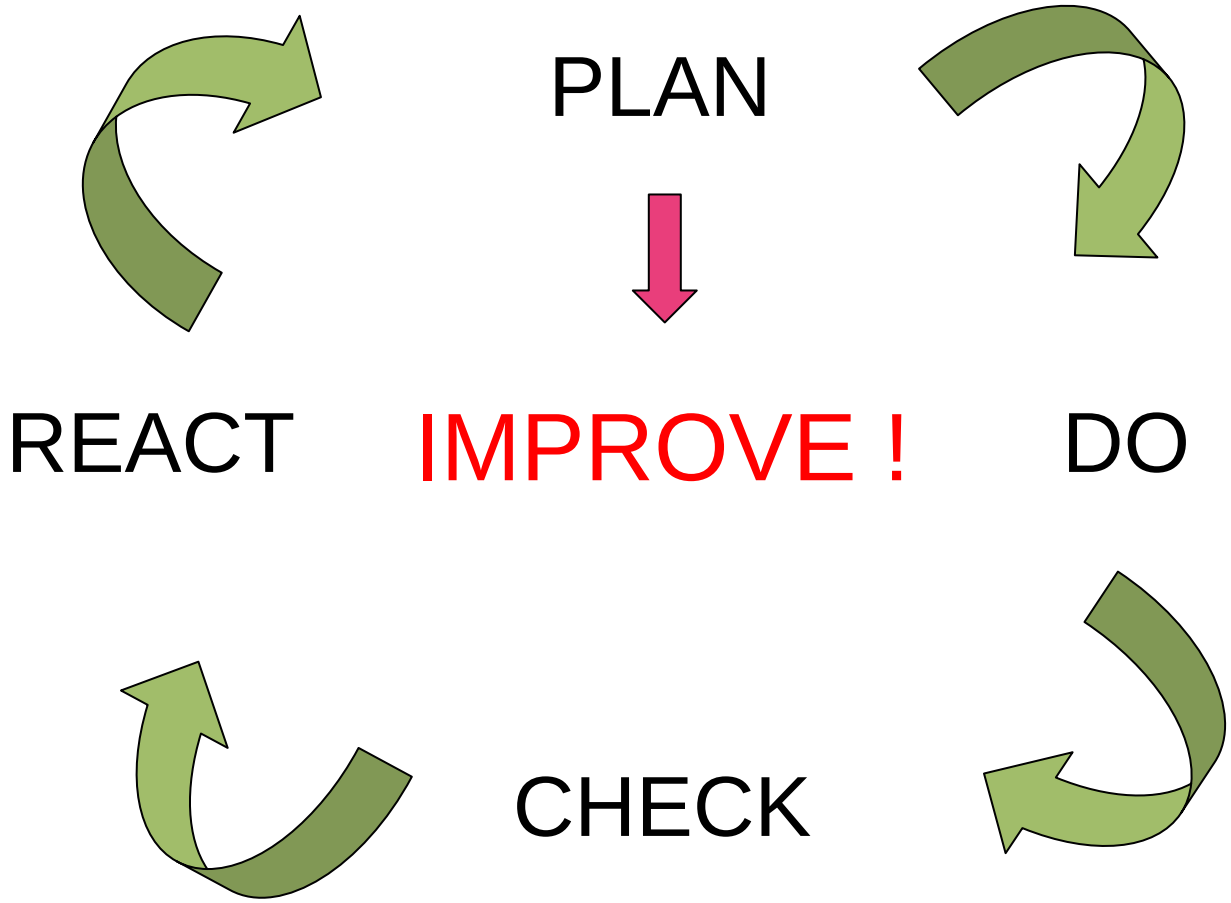
[2] The full DES QMP can be found at http://des.nh.gov/pdf/NHDESQMP_Rev5_03.04.05.pdf

health and the environment in the state, the QMP also includes guidance on assuring that data generated by these outside parties meet DES's data needs.

Implementation of the DES QMP is the responsibility of staff throughout the Department, with the guidance and support of the DES Senior Leadership Team, the QA Manager and QA Team, as well as program managers.

The DES QA System is intended to ensure that program managers generate, review and transmit data that has the appropriate quality for the intended uses. It follows established management principles of "Plan-Do-Check-React" or Total Quality Management, as taught by Deming and many others after him.

In the most basic of terms: 1) You plan what you're going to do; 2) You do it; 3) You check to make sure it was done right; and 4) You react to change the system to address problems and to improve the system. The process can be represented as follows:



Definitions

Excerpted from DES Quality Management Plan

Data Quality Objective

Qualitative and quantitative statements that clarify study objectives, define the appropriate type, users, consumers and functional efficacy of data that will be used as the basis for establishing the quantity and quality of data needed to support decision-makers**.**

Document

Any written, recorded information that is subject to change over time. Procedures, plans, policies, and records are documents. Documents may be controlled. See Records.

Environmental Conditions

The description of a physical medium (e.g., air, water, soil, sediment) or biological system expressed in terms of its physical, chemical, radiological, or biological characteristics.

Environmental Data

Any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology.

Program

A functional unit of the New Hampshire Department of Environmental Services (DES) conducting a defined program. This administrative function will often be found at the Bureau level, but this varies across DES. An example would be the Limnology Program within the Watershed Management Bureau of the Water Division.

Program Manager

The person responsible for conducting a specific DES program; this program management function is vested in people at different administrative levels within DES.

Project Manager

The person that has direct knowledge and/or responsibility at the project or site-specific level.

Records

A completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, or other data recording media. See documents.

Standard Operating Procedures (SOPs)

A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method of performing certain routine or repetitive tasks.

The DES QA System – the Condensed Version

This *QMP Implementation Guidance for Program Managers* is intended to help program managers and staff more clearly understand what it is they need to do. The first step is to determine how, or if, you handle "environmental data."

Environmental data is defined as *"Any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology."*

Therefore, if your program is involved with or conducts any of the following tasks, you are, or will be, covered under the DES QA System umbrella:

- Take samples in the field
- Conduct testing in a laboratory
- Describe conditions in the field
- Conduct testing in the field
- Reviewing, analyzing and/or reporting on data generated by others.
- Communicate the results of sampling and/or testing

These activities can be considered together as "data activities": Gathering data or samples; conducting tests; checking work done by others; and communicating the results, including the limitations of the results.

Documentation, record-keeping, and training to ensure proper competency, are the key support steps. All of your program's environmental data issues must be documented, although there is wide latitude in how they are documented.

There is an important exception to that last statement. Programs who use EPA funds for their environmental data activities must produce a *Quality Assurance Project Plan (QAPP)* per EPA specifications. An EPA-approved QAPP will fulfill the requirements of the DES QA System, with a few minor exceptions, notably, the need for documenting a record-retention policy for the program in question.

The steps of "Plan, Do, Check, React" in the context of the DES QA System will generally follow these patterns:

Plan:

The first planning step is to determine what data activities your program undertakes. Document the results of this determination and save the document with other program-administration materials that you have to keep.

The reason for the data gathering is the central issue. You must know:

- Why do you need this data?
- What decisions may be made using this data?
- Who will use this data – who are the customers/audience?
- What legal requirements are being met with this data?

This bulleted list outlines a concept called *Data Quality Objectives*. The idea is to tailor the level of data you need to the uses of that data. If there is no use for the data, perhaps you can focus your efforts elsewhere.

The next step is to ensure that each of your data activities is described in a written guidance, whether you generated this yourself or it is something published elsewhere. This written guidance must be made available to relevant staff as part of a training process, and the training must be recorded.

Do:

This is the easy part. Do the work that you ordinarily do, following your own procedures. Make sure that the data gathered is properly recorded.

Field conditions may require you to vary from the established procedures. Make sure that these variances and the reasons for them are recorded. You will need that information in the Check and React steps of the process.

Check:

This is where you begin to *manage* the process. You must explicitly check, at least annually, whether the work went as expected, whether your procedures still meet your needs, and where improvements can be made. The checking must address the *root cause* of deficiencies, wherever this is possible, so that your procedures can be improved. Most importantly, the checking must be documented. A form of some sort can be very useful for this. Using a form helps ensures that you cover all the points that need to be covered, and the form itself can be used to record the results.

This checking is referred to in the world of management science as "auditing". The DES QA Team has conducted some audits of DES programs to assess their quality systems, and we've attached the checklist we used for those audits. This is presented as an example only: if you see ways to improve it for your program's use, you should feel free to do so. Recording the deficiencies you find is especially important.

It's important to understand that this auditing is not to find fault with individuals. It is to find how you and your people can do their job better by identifying areas for improvement.

React:

This is entirely a *management* function. You review the results of the checking and address deficiencies. Any deficiencies that haven't already been addressed must be weighed as to their importance and balanced against the resources you have available so that you can decide what improvements are possible and/or necessary. This step is very important. This makes the system an ongoing *system* and not just a one-time project. Please remember that no matter how well you do, improvements are always possible.

This review-and-respond (i.e. "React") process must be documented. Corrective actions you take to address deficiencies must be recorded, so that you can check later to see if they worked.

Documents and Records

Throughout the DES QA System, you are asked to record or document events, decisions, or procedures. Absent other requirements, we intend that this to mean written records, kept as simple as possible. A memo to file will often be sufficient. The important thing is to write down your policies, procedures and the results of checking so that the information can be retrieved later.

Some definitions:

Document: Something written or otherwise recorded which is subject to revision over time. Procedures, policies, guidance manuals (like this one), are documents. Compare with *records*.

Controlled Document: A controlled document is revised in a controlled manner. Revisions are reviewed and approved by management personnel. Only a single (usually the latest) version of a controlled document is in use at any given time. Obsolete versions of controlled documents are often discarded after archiving one copy for reference.

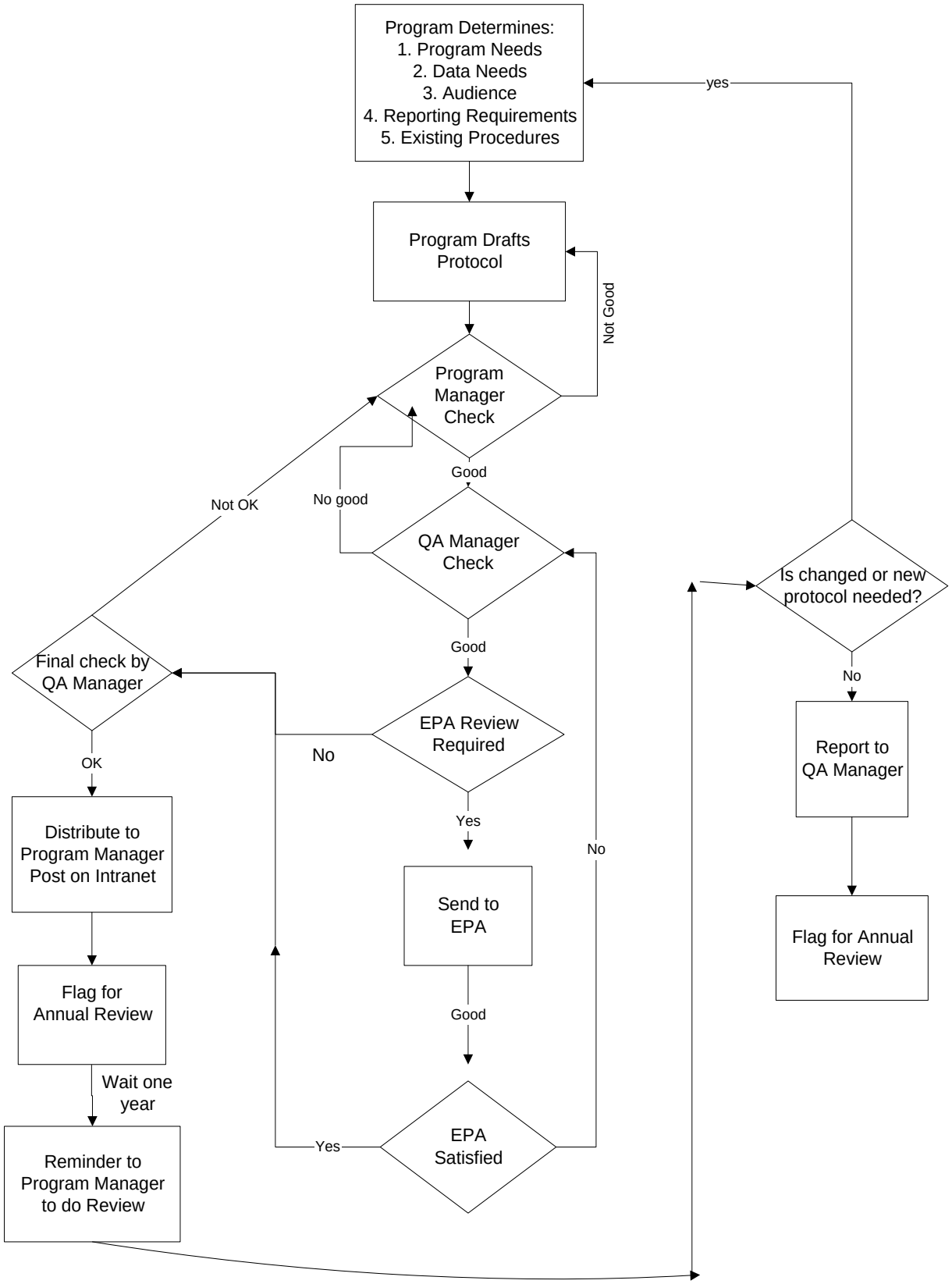
Record: Something written or otherwise recorded that is *not* subject to revision over time. Test results, field notes, and photographs are all records. Records may be discarded after a set period of time.

Most procedures used in the DES QA System are documented, that is, they are controlled documents that are developed, reviewed, approved, periodically checked, and revised as necessary.

If the DES program developing the procedure is funded by EPA, then EPA requirements apply and EPA review is usually necessary. In general, compliance with the relevant EPA requirements will satisfy the requirements of the DES QA System. Most often, meeting the EPA requirements will involve producing a *Quality Assurance Project Plan* (QAPP). A QAPP can be done for a complete program or for an individual project.

A program-level document can be more difficult to develop since it will have to cover more kinds of work and allow for more contingencies. However, there would be less QA planning work required for individual projects when a program-level document is used. In this case, for individual projects, documentation is only needed for items that are specific to the project – in general, physical location, and any special data needs that the project itself poses.

The process of document development in the DES QA System is graphically described in the figure on the next page:


Program Determines:
1. Program Needs
2. Data Needs
3. Audience
4. Reporting Requirements
5. Existing Procedures
yes
Program Drafts Protocol
Not Good
Program Manager Check
Good
Not OK
No good
QA Manager Check
Is changed or new protocol needed?
Good
No
Final check by QA Manager
EPA Review Required
No
Report to QA Manager
OK
Yes
No
Distribute to Program Manager Post on Intranet
Send to EPA
Flag for Annual Review
Good
Flag for Annual Review
Wait one year
Yes
EPA Satisfied
Reminder to Program Manager to do Review

DES QA System Checklists

The following pages include worksheets/checklists that program managers can use to help them better understand the various elements of the QMP and to establish whether they are in compliance with different aspects of the DES QA System. Utilizing the completed worksheets/checklist as records can serve as documentation that your program has complied at that time.

The first checklist is to determine if your program has requirements under EPA's data quality system to fulfill. The rest are mainly intended for programs not covered under EPA's system, but they may be useful to the EPA programs as well.

The checklists (apart from the first one) are specific to individual topics within the DES QA System. Each of them refers to a chapter or section of the DES Quality Management Plan. You should only use the checklists that apply to you.

While some pages only require a check to ensure compliance, others will ask whether documentation exists, or is applicable, to a manager's programmatic responsibilities. If you have questions, you should refer to the relevant chapter, or contact the DES QA Manager or a member of the DES QA Team.

To QAPP Or Not To QAPP

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Does your program receive EPA funds to carry out work to obtain, use, or report information pertaining to environmental processes and conditions? If the answer is YES, you will have to prepare a *Quality Assurance Project Plan* (QAPP) per EPA requirements. See these documents for information on composing a QAPP, or related document: *USEPA Region 1 - New England Compendium of Quality Assurance Project Plan Requirements and Guidance*, October 1999, Final, or later edition, and/or *USEPA Volunteer Monitor's Guide to Quality Assurance Project Plans*, EPA 841-B-96-003, September 1996, or later edition. There is also a document *USEPA Requirements for Quality Assurance Project Plans, QA/R-5,* March 2001, or later edition, but as of 2001, Region 1 has been using the *Compendium* referenced above in lieu of the QA/R5 document. If the answer is NO, and your program uses state funds to carry out work to obtain, use, or report information pertaining to environmental processes and conditions, you should proceed through this Implementation Guidance. The rest of the checklists in this DES Implementation Guidance are intended for the non-EPA funded programs, but the EPA-funded programs may find them useful. If the answer is N/A, i.e., your program does not carry out work to obtain, use, or report information pertaining to environmental processes and conditions, you are not covered under the DES QA System, and you're done.	

Chapter 4 - Personnel Qualification and Training Guidance

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Do you assure that your DES staff and volunteers get the necessary and appropriate training to prior to their carrying out duties that might have an adverse effect on meeting quality assurance goals and objectives?	
Y N N/A	Do you maintain a file of staff and volunteer training records?	
Y N N/A	Where are these files physically located? Are they accessible?	
Y N N/A Y N N/A	Optional: Have you forwarded all employee-training records to DES Human Resources? How often is this done? Volunteer training records stay with the overseeing program.	
Y N N/A	Do you complete required annual staff performance appraisals as required?	
Y N N/A	Have you built in appropriate quality assurance-related evaluation criteria?	
Y N N/A	Have you developed a procedure to evaluate the performance of volunteers aiding in the collection, transport, and interpretation of data?	
Y N N/A	Have you updated the Supplemental Job Descriptions of all relevant staff to accurately reflect their quality assurance-related duties?	

*****Administration of activities pertaining to staff qualifications and proficiencies of state agency employees are dictated by the New Hampshire Code of Administrative Rules of the Division of Personnel, Chapters Per 100 through 1500, adopted April 21, 1998. These fall under the statutory authority of RSA 21- I:43, II. Supplementing these rules are three Technical Assistance Manuals describing procedures that are followed pertaining to certain aspects of personnel management. These are *Technical Assistance Manual Chapter I – Classification; Technical Assistance Manual Chapter II – Recruitment and Certification; and Technical Assistance Manual Chapter III – Examinations.* The Division of Personnel, located at 25 Capitol Street in Concord, NH, holds copies of all these documents

Chapter 5 - Procurement of Equipment Supplies, Services
&
Chapter 7 - Computer Hardware/Software Guidance

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Do you and your staff follow the rules and regulations in place governing the procurement of supplies and services: * 40 CFR Part 33-Procurement Under Assistance Agreements; ** RSA 21-I:22-Procurement of Engineering Services; and *** Part Adm. 311.07, N.H. Code of Administrative Rules-Service Contracts? (See below)	
Y N N/A	When procuring supplies, equipment, and/or services (particularly those that have a quality assurance component), do you effectively research and communicate your quality assurance goals and objectives (needs) to vendors?	
Y N N/A	When procuring computer hardware and software, do you communicate your quality assurance needs to appropriate DES IRMU staff?	
Y N N/A	Do you work closely with DES IRMU and EPA staff regarding quality assurance aspects maintaining, supporting, and interfacing with EPA and other related data systems and monitoring networks?	
Y N N/A	When working with DES IRMU staff on the custom development of in-house software applications and databases, have quality assurance-related elements/components been satisfactorily addressed?	
Y N N/A	When procuring more costly quality assurance-related goods and services, do you clearly articulate quality assurance needs and specifications in the appropriate standard state contract exhibits “A” and “B”?	
Y N N/A	Upon receipt of supplies and equipment, or work products under contract, do you quickly inspect and evaluate them to determine if all quality assurance-related needs have been met in accordance with specifications.	

Y N N/A	Do you have procedures in place to confirm manufacturer's performance claims as they relate to quality assurance needs?	

* 40 CFR Part 33 outlines the general federal regulations for procuring all types of services and material. State laws and regulations provide requirements that are more specific.

** RSA 21-I:22 deals specifically with the procurement of engineering services. In summary, this process involves issuing a request for proposal (RFP), rating each firm that responds (using any necessary quality-based criteria), selecting a short list of qualified firms, evaluating these potential contractors via project presentations, and conducting final negotiations with the highest-ranked firm. In this manner, DES ensures that professional services will be provided with appropriate quality, and at a reasonable cost.

*** Part Adm. 311.07 outlines the process for obtaining approval of service contracts through the N.H. Department of Administrative Services and the N.H. Governor & Council. See Appendix F of the DES QMP for a copy of a standard State Contract with terms/conditions and sample exhibits included.

Chapter 6 - Documents and Records Guidance

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Is there a documented retention schedule in place for the data collected under your supervision? This response may now serve as your official schedule documentation. Remember that different data sets may have different schedules, i.e.—perpetual, 6 months, 18 months, etc. Please be as specific as possible.	
Y N N/A	Is a copy of data regarded as "highly valuable" kept in a separate building?	
Y N N/A	With regard to your record-keeping system, do records clearly indicate the date of field observations, sample collector, sample preparation, equipment calibration and testing, and other related activities?	
Y N N/A	Do records include the identity of personnel involved in making observations, collecting field data, sampling, preparation, calibration, or testing?	
Y N N/A	Does the record-keeping system facilitate the retrieval of all working files and archived records?	
Y N N/A	Are all documentation entries signed or initialed by responsible staff? Is the purpose for the signature or initials clearly indicated in the records, (i.e., "sampled by", "prepared by", or "reviewed by")?	
Y N N/A	Are all data sets, except those that are generated by automated data collection systems, recorded directly, promptly, and legibly in permanent ink?	
Y N N/A	Are all record-keeping mistakes corrected by the use of a single line through the error accompanied by initials and the date the correction was made?	
Y N N/A	Are procedures implemented for maintaining the security of data, including the prevention of unauthorized access to, and unauthorized amendment of, computer records?	

Y N N/A	Is access to archived information documented with an access log?	
Y N N/A	Are staff distribution lists documented and maintained?	
Y N N/A	Are documents posted on the Intranet the most updated version(s)?	
Y N N/A	Are all controlled documents marked with a revision date, using a footer at the bottom of each page in the document?	

Chapters 8.1 & 8.2 - Project Planning and Implementation

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Has an individual project manager been identified and involved in the project? Have all customers for the data and all suppliers of the data been identified? The program manager is responsible for this key step in the process.	
Y N N/A	Have the project goals, objectives, and questions/issues to be addressed been communicated in writing to the parties identified in Step 1? The project manager is responsible for this step; the program manager reviews and approves it.	
Y N N/A	Identify the project schedule, required resources (including budget), milestones, and any other applicable requirements (e.g., regulatory and contractual requirements). The project manager prepares this for the program manager's approval.	
Y N N/A	Identify the type and quantity of data needed and how the data will be used to support the project's objectives and communicate this to relevant parties. This is referred to as establishing the "Data Quality Objectives." (DQOs) See the guidance for Sec. 8.3 for further information on establishing DQOs. This is the program manager's responsibility, but should be a collaborative process among parties identified in Step 1. This is not to presuppose what the data will show but rather to ensure that the questions that need to be answered can be answered with the data to be gathered.	
Y N N/A	Identify the performance criteria for measuring data quality, including any statistical methods proposed, and ensure that relevant parties understand the criteria. This is the program manager's responsibility, but should be a collaborative process among parties identified in Step 1.	
Y N N/A	Identify the QA/QC activities necessary to assess the quality performance criteria (*e.g.,* QC samples for both the field and laboratory, audits, technical assessments, performance evaluations, etc.) and ensure that relevant parties understand them. This is the project manager's responsibility, although he/she should consult with the laboratory or other parties as needed.	

Y N N/A	Determine how, when, and where the data will be obtained (including existing data) and identify any constraints on data collection, and document these in writing. The use of existing data is encouraged, provided its quality is known and appropriate for the project; new data should be used to fill gaps in existing data or to determine if the situation described by the existing data has changed. When new data is to be generated, the sampling and analysis procedures must be documented. Design of a sampling and analysis program must explicitly include how it is anticipated that the program will meet the DQOs. The project manager is usually responsible for this, with input from the program manager as appropriate.	
Y N N/A	Consider whether it is appropriate to evaluate and qualify data from non-DES sources, especially data gathered or analyzed by contractors, volunteers or other organizations such as universities or other research organizations. The project and program managers share this responsibility and should document their decisions.	

Chapter 8.3 - Data Quality Objectives Guidance

Reminder: Data Quality Objectives (DQOs) are defined as "Qualitative and quantitative statements that clarify study objectives, define the appropriate type, users, consumers and functional efficacy of data that will be used as the basis for establishing the quantity and quality of data needed to support decision-makers." The DQO concept is a cornerstone of the DES QA system. You have to consider what you intend to do with data to determine how much of what kind & quality of data you need.

Applicability	***Quality Assurance Element***	***Initials***
Y N N/A	In order to determine DQOs, program managers must consider and document decisions regarding the following: 1) What decisions will be made using this data? 2) What is to be communicated by using this data? 3) Will a prospective decision remain the same regardless of what the data shows? 4) If there is nothing to be communicated or decided by this data, is it n necessary to gather the particular data? This is not to presuppose what the data will show but rather to ensure that the questions that need to be answered can be answered with the data to be gathered.	
Y N N/A	DQO's should be discussed with program staff, participating organizations, and laboratory staff so that methods and detection levels can be agreed upon prior to sampling. The laboratory should also be included in any discussion of time frame for sampling and numbers of samples so that laboratory capacity will be available to handle the influx of samples from a large project. These steps are imperative to assure the reliability of the data.	

Chapter 8.4 - Sampling Guidance

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Are your sampling activities defined, controlled, verified, and documented to the extent required? Written sampling procedures must be followed in all instances. Wherever feasible, sampling procedures written by others, such as *Standard Methods for the Examination of Water and Wastewater*, or various USEPA guidance documents, should be included or referenced in the procedures. Where sampling procedures written by others are not available, the program manager must ensure that a program-specific procedure is produced and made available to staff.	
Y N N/A	Are there enforcement concerns? If so, documentation and adherence to procedures becomes even more important. See Appendix E for DES's *Assurance and Response Policy (CARP), Chapter IV - (*http://www.des.state.nh.us/legal/carp/carp-ch-4.pdf*)*.	
Y N N/A	Have sampling personnel been trained in the use of the equipment? Have the training records been added to each employee's respective file in the DES Human Resources Office?	
Y N N/A	Have you considered how the sampling will meet the data quality objectives (DQOs)? See the checklist for Chapter 8.3.	
Y N N/A	If the location is being sampled for the first time, or if samples will be taken at the same location again, be certain to record the location and mark it in the field as necessary. Consider the feasibility of utilizing a GPS unit to identify the sampling location.	
Y N N/A	How the samples will be transported to the testing or examination location must be established. If other agencies or parties will be taking split samples, appropriate arrangements must be made. DES will give these other parties full cooperation.	
Y N N/A	If people living near the sampling location, or local authorities, are interested in the sampling effort, the project manager must make appropriate arrangements for communications with any affected parties and the public. All such communications must be noted in the log or field book. All DES personnel must be aware that they work for the people of New Hampshire and must be informative and polite.	

Y N N/A	If non-DES parties are sampling, the project managers must ensure that the other parties are using appropriate written sampling procedures. This may include review and approval of the other party's procedure.	
Y N N/A	The following issues must be addressed by the sampling procedures, together with any required Health and Safety Plan: choice of sampling equipment; decontaminating or discarding the sampling equipment; personal protective clothing or equipment needed; containers and preservation needed for the sample; any requirements related to transportation to the testing location; and field documentation requirements.	

Chapter 8.5 - Field-Testing Guidance

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Is staff aware that documentation must take place immediately upon testing, following established guidance for documentation?	
Y N N/A	Have you determined what compounds are being tested for, in what medium, and what detection limit is needed to produce meaningful results?	
Y N N/A	Has consideration been made for other compounds or conditions possibly present that could interfere with detecting the compounds being tested for?	
Y N N/A	Have you considered splitting some samples so that confirmatory testing can be done in a laboratory?	
Y N N/A	Have you considered the environment in which the testing will take place – outdoors or in a truck or trailer? There may be special weather-related requirements for equipment, such as avoiding temperature extremes or high humidity conditions.	
Y N N/A	Have you ensured that the personnel doing the testing have the proper training to run the testing equipment in question? Training records must be kept up-to-date with Human Resources. See QMP Chapter 4 Personnel Qualifications and Training Guidance.	
Y N N/A	The following issues must be addressed by the field testing procedures, together with any required Health and Safety Plan: choice of equipment; calibrating the equipment and calibration records; decontaminating or discarding the equipment; personal protective clothing or equipment needed; containers and preservation needed; any requirements related to transportation to the testing location; and field documentation requirements.	

Chapter 8.6 - In-House Testing Guidance

This guidance is written for programs other than the DES Laboratory Services Unit. They have extensive guidance of their own which should be consulted as necessary.

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Is a pre-existing protocol available, or is a program-specific one needed? Whenever feasible, sampling procedures written by others, such as Standard Methods for the Examination of Water and Wastewater or various USEPA guidance documents should be used. In those cases, care must be taken to ensure that the most up-to-date, approved edition is used. Where such testing procedures are not available, the program manager must ensure that a program-specific procedure, which meets the program's data quality needs, is produced and made available to staff. When in doubt, project and program managers should consult with the Administrator of the DES Laboratory Services Unit or the Laboratory Services Unit QA Manager.	
Y N N/A	Have you determined what compounds are being tested for in what medium, and what detection limit is needed to produce meaningful results?	
Y N N/A	Has consideration been made for other compounds or conditions possibly present that could interfere with detecting the compounds being tested for?	
Y N N/A	Have you ensured staff has the training needed to run the testing equipment in question? Training records must be kept. See QMP Chapter 4 Personnel Qualifications and Training Guidance.	
Y N N/A	When testing is done by others, either by private parties (including a number of volunteer organizations such as the Volunteer Lakes Assessment Program and the Volunteer Rivers Assessment Program) who are reporting results to DES or by parties such as contractors working as DES proxies, the same procedure issues apply. It is the program manager's responsibility to ensure that these other parties are using appropriate written procedures. This may include review and approval of the other party's own procedure. Reference should be made to other standard procedures being used.	

Y N N/A	Testing procedures must include: information on choice of equipment; calibration of the equipment and calibration records; QA/QC measures needed to ensure that the DQOs are met; decontamination requirements; personal protective clothing or equipment needed; containers and preservation needed; and documentation requirements.	

Chapter 8.7 - Environmental Conditions Description and Data

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Have your staff been trained in program procedures for field recording of environmental condition data?	
Y N N/A	Have you provided staff training as to where or how to store this information?	
Y N N/A	Has a filing system been established to allow this information to be easily retrieved?	

Chapter 8.8 - Guidance for Reporting Results

Applicability	*Quality Assurance Element*	*Initials*
Y N N/A	Do your program's reporting formats contain information that allows the person receiving the report to assess the data quality? Remember that QA/QC information must not obscure the data being reported. Dates and sampling/test methods must be included or referenced. Raw data should be included as necessary.	
Y N N/A	Are your programs' reporting formats designed to clearly communicate the data? Data must not be obscured by technical jargon, therefore, the audience must be considered when preparing a report. Greater clarity is needed for reports to the public and detailed QA/QC information may not be necessary. When reporting to technical staff, full QA/QC information should be included.	
Y N N/A	Do the reports include the name of the sampler/tester and of the reviewer?	
Y N N/A	Do your reports include tables and graphs to allow for clear communication? Where past results are part of that summary table or graph, the report should include enough information to allow interested people to find that past data. Including the date of the past sampling/testing, the location and parameter being sampled/tested, and the person/unit that did the testing will probably be sufficient to meet this goal.	
Y N N/A	Are sampling and test results to be reported to a designated program person? For instance, the DES laboratory will report to the person doing the sampling, unless specifically instructed otherwise. The project manager is responsible for instructing staff to forward results to the proper parties.	
Y N N/A	Where samples are taken on private property, has the property owner been sent a copy of the results? Unless enforcement considerations dictate otherwise or the property owner has stated that he/she does not want the data, this should probably be done. If a municipality has requested specific data, or entire classes of data, it must get the results unless enforcement considerations indicate otherwise. In this case, the municipality should be informed, confidentially if necessary, that this information is enforcement-confidential.	

Y N N/A	Is data shared with USEPA and other government agencies freely? In general, all DES data is public information. DES staff should be open, and in fact pro-active, in sharing our information.	

Chapter 9 - Assessment & Corrective Action Guidance

Applicability	*Quality Assurance Element*	Initials
Y N N/A	Do you understand that as Program Manager the DES QA Policy requires you to annually assess whether operations comply with requirements outlined in the DES QMP, required QAPPs or similar documents, SOP's, technical or professional standards, or other requirements?	
Y N N/A	Do you have the most updated QA system audit checklist?	
Y N N/A	Did you record the results of your assessment in memo form and deliver results to DES QA Manager? This memo must include a listing of the items reviewed, deficiencies found, reasons for the deficiency, and either a schedule for implementing corrective action, or documentation of the corrective actions taken (see Sec.9.6 of the QMP).	
Y N N/A	Does someone other than the person who gathered the data check it?	
Y N N/A	Does the checking person initial or otherwise sign off on the data sheet?	
Y N N/A	When the checker has an issue with a data point, is there a process to address his/her issues?	
Y N N/A	Have you read and understood Chapter 9.2 of the QMP, which contains methods by which your data usability concerns can be addressed.	
Y N N/A	Have you performed your annual performance appraisals per specs in NH Administrative Rules Per 100 through 1500 and the DES Human Resources Unit?	
Y N N/A	Are staff reporting all significant variances from, or problems with the procedures in QAPPs, SOPs, or other Department requirements, as they occur? (These variances or problems are referred to as "non-conformances")	

Y N N/A	Do staff have updated copies of the non-conformances and corrective actions log sheet attached to this guidance package?	
Y N N/A	Do you have a file for these log sheets to allow you to produce them during a QA System audit?	

Appendix 1

NHDES Quality Assurance System

Base Audit Checklist

Audited Program: _____

Program Representative: _____

Auditor(s): _____

Audit Location: _____

Audit Date(s): _____

Description of Program: _____

_____

_____

Notes:

When asked to “show/provide” documentation, a copy should be provided to the auditor, unless the document in question is both a) book-length *and* readily available, e.g. EPA guidance documents.

Copies of audit report shall be provided to the Quality Assurance Manager and the manager of the program being audited.

Write on the back of the sheets if necessary, using the question numbers to key responses.

1. Background information	
a) What data do you gather/use/compile?	
b) What decisions are made using this data?	
c) What is the audience for the data?	
2. Data Quality Objectives	
a) Show/provide documentation on how you determine your data quality needs or objectives. If none documented, describe them	
b) How are these data quality needs/objectives communicated to staff?	
c) Do your DQOs change when there are enforcement concerns?	

3. Sampling

a) Show/provide written sampling procedures If none documented, describe them	
b) How do you field-modify sampling procedures? Show/provide approval procedures How are changes approved? How are changes recorded? Provide documentation of field-modification guidance/procedures	
c) How is staff trained in procedures? Show/provide documentation	
d) How are training records kept? Show/provide documentation	
e) How is equipment calibrated?	
f) How are calibration records kept?	
How do you ensure that your sampling methods and procedures meet your data needs?	

4. Field Testing

a) Show/provide written field testing procedures If none documented, describe them	
b) How do you field-modify testing procedures? If non documented, describe them How are changes approved? How are changes recorded? Provide documentation of field-modification guidance/procedures	
c) How is staff trained in procedures?	
d) How are training records kept?	
e) How is equipment calibrated?	
f) How are calibration records kept?	
g) What field records are generated? Show/provide copy of guidance/procedure	
h) How are records kept in the office? Show/provide copy of procedure/guidance	
i) How do you ensure that your sampling methods and procedures meet your data needs?	

5. In-house Testing

a) Show/provide the written protocols you follow	
b) How are they changed (on an ad-hoc basis)? What approval procedures are followed? How are changes recorded? Communicated to user of the data?	
c) How do you ensure that protocols are up to date?	
d) How do you check in-coming sample material? Show/provide copy of procedure How is this check recorded? How do you address non-conformances?	
e) How is data handled when a test is not run per specification?	
f) How is staff trained? How are training records kept?	
g) Show/provide copy of procedure for recording test results	
h) Show/provide copy of procedure for communicating results to the data user?	

6. Environmental Conditions Descriptions & Data

a) How do you decide what information to record? Provide documentation of decision	
b) How is the information recorded? If forms, provide copies	
c) Show/provide copy of procedures for taking field notes? If none documented, describe them	
d) Show/provide copy of procedures or guidance for photo-documentation If none documented, describe them	
e) How is staff trained? How are training records kept?	
f) How are deviations from procedures handled? Before the fact After the fact	
g) How are changes to procedures made? Who approves? How are they communicated to staff? Show/provide example document Is there a procedure for this process?	

7. Review & Validation of Data

a) Show/provide any written guidance you have to describe how you check data If none documented, describe them	
b) Show/provide any written guidance you have to describe how you address non-conforming data If none documented, describe them	

8. Retention of Data

a) Show/provide filing procedures If none documented, describing them	
b) Do you keep back-up copies of any data? How do you decide what to back-up? Show/provide copy of procedure	
c) Show/provide procedures for securing files If none documented, describe them	
d) How long do you retain data? Show/provide copy of data retention decision Include data removal/destruction decision	

9. Reporting Results

a) Who do you send data to? *Note: "Send" refers to anyone outside of the program, whether elsewhere in DES or external to DES*	
b) Show/provide written guidance on reporting formats If none documented, describe them	
c) How do you decide who is responsible for signing the data reports? Show documentation of decision	
d) When reporting to different audiences, do you vary the form or type of report? How is this decision made?	
e) How is staff informed of proper reporting methods? Provide example documentation	

10. System Reviews & Assessments

a) Do you *periodically* review your data quality system to see that it is up to date and appropriate? Show/provide documentation for the last review Note: this does not refer to ad hoc adjustments	
b) How do you document and correct non-conformances?	